
**SMALL SCALE AGRO-PROCESSING IS A KEY COMPONENT OF RURAL MASS
EMPLOYMENT GENERATION IN BANGLADESH: CONCEPT MODEL**

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ABSTRACT

This concept paper was presented on SAARC regional consultation meeting on assessment of the role of agro-processing as a key component of rural mass employment and rural development models during 17-20 August, 2016 at Amrita University, Coimbatore, India by the authors. This article is about the rural development model for mass employment generation through small scale cooperatives based on agro-processing intervention. In Bangladesh, because of the great revolution in agriculture, a large amount of agricultural raw materials are available especially like fruits and vegetables. If ten people can together start a cooperative enterprise they will be benefited as well as rural unemployment problem of Bangladesh will be solved. In this paper all the items for an enterprise such as the layout of factory, list of equipments requirement as well as marketing finished products are discussed. The authors described a concept model to provide the whole business idea including technical and financial aspects. The authors emphasized on rural employment generation by agro processing enterprise development.

Keywords: Small scale agro-processing; Concept model; Equipment requirement; Factory design and layout; Products identification; Value chain and marketing

INTRODUCTION

Agro-processing businesses play an important role in the economy of all countries. It is a dynamic and fast growing sector and therefore has the potential to provide opportunities for income generation and employment. This is particularly important because agriculture and the formal sector are unable to absorb growing labour forces in many countries.

Poverty alleviation constituted the basic theme of all five Year Development plans of Bangladesh since its independence and considerable efforts have been made to alleviate poverty in Bangladesh. In spite of continuous efforts the incidence of poverty remains high in Bangladesh and this is high in the north-west region of Bangladesh.

During the last decades, lots of efforts had been undertaken to reduce poverty through several initiatives in this region. But many of them could not address properly to keep them up on trying

to uplift them. Rural economy is mostly based on the success of agricultural initiatives. But success rate is not quite satisfactory. Farmers could not uplift their economic status as expected based on agricultural production. So, they have to find out various means of diverting/transforming themselves from this situation to diversified activities.

In 2012 Bangladesh is endowed with a fertile land and favorable climate for the production of various agricultural products and the economy of this country draws its main strength from agriculture sector. The sector contributes 18.70% to GDP (at current prices) and employs about 60% of the labor force. Considering its potentiality, the Government and NGO have given much emphasis on the development of agricultural products and agro-based industries in the country. Agribusiness, itself contributes 10% to GDP. Despite of having high potentiality in agriculture business and comparative advantage in this business, the farmers who produce the crops live under extreme poverty as they do not get the fair price for their products as for plethora of intermediaries in the market.

Agro-processing encompasses the development and use of appropriate equipment and technology. These technologies are designed to save time and to make the processing of foods less laborious.

Small-scale agro-processing is a technology that it particularly suited to women and thus has a central role to play in poverty elimination. It builds on indigenous knowledge, it requires few inputs and can be carried out in the home, thus enabling women to fully participate while maintaining their various other roles as career and homemaker.

The major commercial agro processed products are Fruit based (e.g. Pickles, Chutneys, Jellies, Sauces, Juices) Vegetables based (e.g. Pickles, Sauces, Fruit Candy), Spices (e.g. Chili powder, Turmeric, Coriander, Cumin), Milk based (e.g. *Ghee*, Cheese, Pasteurized Milk, Cheese, Butter, Curd, School feeding meals), Herbal tea (e.g. *Tulsi* tea, Slimming tea, *Harbal* Drinks), juice, drinks and powder, puffed rice, snacks, spices, *chanachur*, biscuits, mustard oil, pickle, frozen vegetables, frozen fish and frozen processed meat.

The major objectives of this article are:

1. To provide a general overview about small scale agro processing concerning employment generation
2. To provide a concept about cooperatives based agro enterprise design
3. To develop a rural development model for mass employment generation

2. Methodology

This research paper is based on primary and secondary information. Primary information was collected from Agro-processing, Preservation and Marketing (APM) unit of Rural development Academy (RDA) in daily basis as well as the market prices of process equipments were collected from different manufacturers and importers of Dhaka city. This article is narrated by the authors' experience, project documents of RDA as well as different rural agro-processing models. The authors' also collected information from national and international news paper cutting as well as the concern websites. Results are based on qualitative rather than quantitative level.

3. Concept Model of Cooperative based Agro-processing

This model will operate according to following the diagram (Fig.:3.1). At first, a baseline survey will be conducted at the initial stage of the project. According to the findings of the study, an action research project will be designed. Each group will consist with ten beneficiaries including producers, actors in marketing, and other agents. The beneficiaries will be trained up on specific trade. Business plan will be prepared by the enthusiastic entrepreneurs with the help of project during initiation of entrepreneurship development. The entrepreneurs will be supported by the project with technically.

In the capacity building courses for the beneficiaries, especial issues like awareness on different aspects like sanitation, gender issues, maintenance of personal hygiene, and Good Manufacturing Practice (GMP), Good Hygiene Practice (GHP), Good Agriculture Practice (GAP). Apart from these, training courses on business development, marketing techniques, etc. will be covered. A Government office will provide support to the entrepreneurs for quality parameters' test and help in maintaining quality in packaging and labeling in line to Bangladesh Standard Testing Institute. At Upazila (sub-district) level, the quality parameter will be checked by the Department of Health.

Model Concept framework

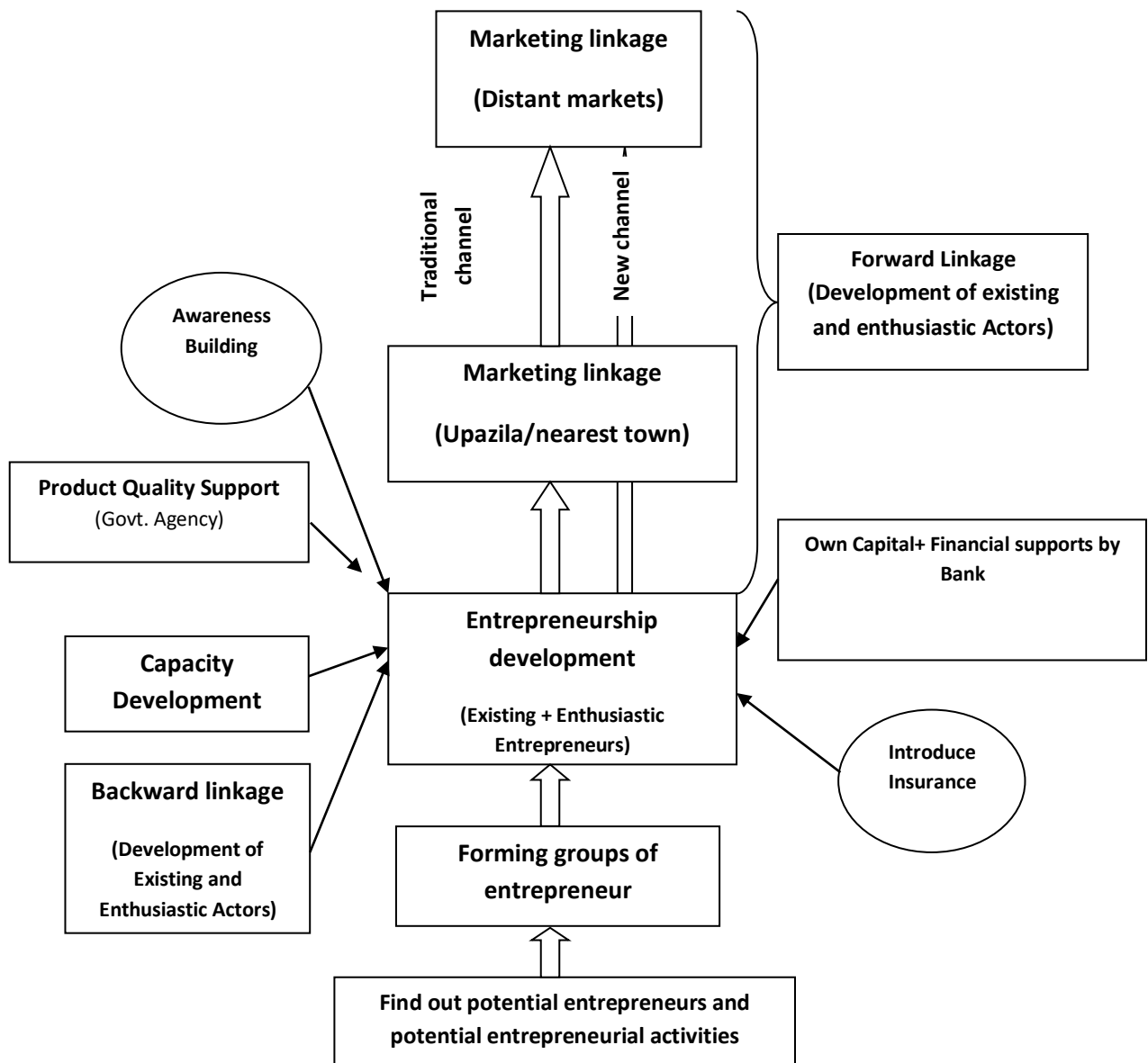


Fig.: 3.1

4. Equipments Requirement and Specifications: The Equipments and utensil required to start agro-processing is given in the following table:

Machineries and processing equipments are shown in table: 4.1

| Sl. No. | Name of Machinery | Specification | Qty. | Unit Price (BDT) | Total Amount (BDT) |
|----------------------|--------------------|---|-------|------------------|--------------------|
| 1. | Electric Dryer | Capacity-10 trays Tray size- 24" x 17" x 3" Size of inner jacket- 37" x 38" x 27" Size of outer jacket- 60" x 46" x 31" Motor- 1HP with Blower Heating system electrical Heater- 12 KW Temperature- 60-80° C Inner and outer jackets will be made of 304 grade SS sheet with 1-1.5 mm thickness, Digital control panel Origin- locally made. | 1 | 380000.00 | 380000.00 |
| 2. | Sealing machine | two types: origin- China. Sealing style- horizontal. | 2 set | 32000.00 | 62000.00 |
| 3. | Heat gun | Origin- China. | 2 | 3600.00 | 7200.00 |
| 4. | Blender/ Pulper | Locally made. | 1 | 15000.00 | 15000.00 |
| Total Amount= | | | | | 464200.00 |

In word: Four lac sixty four thousand two hundred only.

Fig.: Table 4.1

Laboratory equipments are shown in table: 4.2

| Sl. No. | Name of Equipments | Specification | Qty. | Unit Price (BDT) | Total Amount (BDT) |
|----------------------|----------------------------------|---|-------|------------------|--------------------|
| 1. | Moisture meter | For grain to powder products Origin- China/India. | 1 | 18000.00 | 18000.00 |
| 2. | PH meter | Bench type Origin- India | 1 | 8000.00 | 8000.00 |
| 3. | Refractometer | Two types-0 to 32 TSS; 58 to 92 TSS Origin- Poland | 1 set | 10000.00 | 10000.00 |
| 4. | Salino meter | 0 to 100 ^o Brix Origin-China/Taiwan. | 1 | 3600.00 | 3600.00 |
| 5. | Acidity test equipments (manual) | Test tube, pipette, conical flask, beaker, measuring cylinder etc Origin-China/Taiwan. | 1 set | 5000.00 | 5000.00 |
| 6. | Chemical balance | To weight- 0.5 gm up to 600 gm Origin-China/Taiwan. | 1 | 2400.00 | 2400.00 |
| 7. | Digital balance | To weight up to 35kg Origin-China/Taiwan. | 1 | 11400.00 | 11400.00 |
| Total Amount= | | | | | 58400.00 |

In word: Five lac eight thousand four hundred only.

Fig.:Table 4.2

Utensils are shown in table: 4.3

| Sl. No. | Name of Utensils | Specification | Qty. | Unit Price (BDT) | Total Amount (BDT) |
|----------------------|-------------------------|---|-------------|-------------------------|---------------------------|
| 1. | SS Vat | 80 liter capacity, dia-23inch, height-16 inch; materials- 304 grade SS sheet with 1.5mm thickness, lid with 1mm thickness, Origin- locally made | 2 | 6000.00 | 12000.00 |
| 2. | SS Bucket | 20L capacity, SS sheet with 1.2mm thickness; handle with 10mm thickness & lid with 1mm thickness; Origin- locally made | 2 | 6600.00 | 6600.00 |
| 3. | SS Bowl | 20 liter capacity, SS sheet with 1.2mm thickness; Origin- locally made | 2 | 5400.00 | 10800.00 |
| 4. | SS Tray | Dimension 20" x 20" x 10" 304 grade SS sheet with 1.2mm thickness, two handles; Origin- locally made | 2 | 5200.00 | 10400.00 |
| 5. | SS Filter | Dimension 22" x 22" x 6" mesh-40/60/80; 304 grade SS sheet with 1.2mm thickness, two handles; Origin- locally made | 2 | 3400.00 | 6800.00 |
| 6. | SS Mug | 2 liter capacity, SS sheet with 1.2mm thickness; Origin- locally made | 5 | 500.00 | 2500.00 |
| 7. | SS Spoon | Size- large to small, 304 grade SS sheet; Origin- locally made | 4 set | 800.00 | 3200.00 |
| Total Amount= | | | | | 52300.00 |

In word: Five lac two thousand three hundred only.

Fig.: Table 4.3

Others accessories are shown in table: 4.4

| Sl. No. | Name of Machinery | Specification | Qty. | Unit Price (BDT) | Total Amount (BDT) |
|----------------------|------------------------|--|---------|------------------|--------------------|
| 1. | Table | Covered with SS sheet (width-3ft, length-6 ft); frame with MS rod. | 2 | 10000.00 | 20000.00 |
| 2. | Packaging cylinder | 4 cylinders 4 color Origin- locally made | 4 | 10000.00 | 40000.00 |
| 3. | Chutney printed packet | Origin- locally made | 100 kg | 480.00 | 48000.00 |
| 4. | <i>Bondhu chulla</i> | On the basis of dia of SS vat Origin- locally made | 1 | 5000.00 | 5000.00 |
| 5. | Burner | Double, Iron casting | 1 | 6000.00 | 6000.00 |
| 6. | Plastic drum | Capacity: 40-45 L | 20 | 840.00 | 16800.00 |
| 7. | Plastic container | Bowl (Capacity- 20 L), Bucket (Capacity-20 L), Jug (Capacity- 3L), Mug (Capacity-1.5L) etc | 1 set | 3000.00 | 3000.00 |
| 8. | Brush | High Quality | 20 | 120.00 | 2400.00 |
| 9. | Apron | High Quality | 5 | 500.00 | 2000.00 |
| 10. | Mask | High Quality | 400 | 3 | 1200.00 |
| 11. | Hand gloves | High Quality | 10 pair | 60 | 600.00 |
| Total Amount= | | | | | 145000.00 |

In word: One lac five thousand only.

Fig.: Table 4.3

*Here note that 1 USD = 78 BDT according to rate of August, 2016

5.Factory Design and Layout: For small scale agro-processing factory one shed is enough but its need separate space for cooking. Inside this shed there may be some compartment like quality assurance laboratory, raw material storage, finished goods storage, packaging and chemical storage; should be separated. Floor should be mate tiled and inside wall upto five meters tiled. Water should be pure enough for food processing. Here a demo layout is given according to the experience of authors’. This layout dimension is 28 feet length and 18 feel width and height should be 10 feet. The figure 5.1 is shown about the probable layout.

| | | |
|------------------------|--------------------------------------|----------------------------|
| Washing space | Processing space and Packaging space | Packaging Material Store |
| Raw materials store | | Processing Chemicals Store |
| Dryer | | Finished goods store |
| Quality Assurance Room | | Office’s Room |
| | | |

Fig.: 5.1

6.Products Identification: By this machines and equipments the cooperative enterprise can produce the following finished goods (Table 6.1)

| Fruit Candy | Pickles | Chutney | Souses |
|---|-----------------------------------|---|--------------------------|
| a. Green papaya b. Pineapple c. Jackfruit d. Mango e. Ginger f. Garlic | a. Mango b. Olive c. Garlic | a. Mixed fruit chutney b. Boroï chutney c. Mango sweet pickle d. Mushroom sweet pickle | a. Tomato b. Tamarind |

Fig.: Table 6.1

7. Perspectives of value chain: Actors in Backward linkage will help to expedite mainstream entrepreneurial activities, e.g. a puffed rice entrepreneur needs input supply like fuel, rice, sands, frying pan, transports, etc. These input supplies create another avenue in development of backward linkage business. The model will support actors in backward linkage and also new entrepreneurs in supply channel. Through trading, some input suppliers may from different groups for effective supply to the mainstream business channel.

Likewise, various actors will be involved in different activities e.g. packaging, processing, trading, marketing etc. These activities will create another opportunity in operating different types of business. the following flow chart which shows interlink among the stakeholders in backward and forward linkage and also mainstream entrepreneurs.



Fig.: 7.1

8. Marketing Strategies: The figure 8.1 is developed for marketing map design. By this way the finished goods will be marketable in Bangladesh.

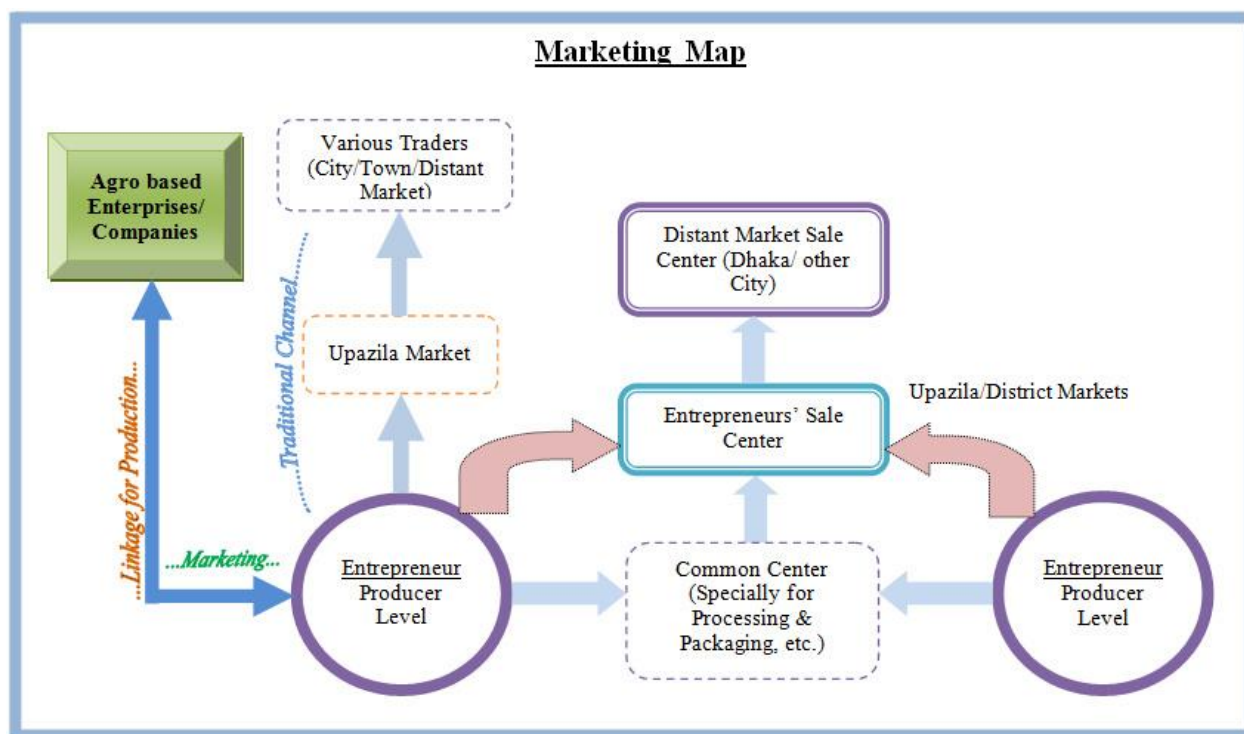


Fig.: 8.1

9. Conclusions and recommendations: Small scale agro-processing although create mass employment generations but they are not without several constraints that also need to be addressed. Policies sometimes in Bangladesh discriminate against small-scale production through legislation, licenses, subsidies, pricing policies, taxation and protectionism. This is also evident in the lack of research and development on the small-scale food processing sector. The lack of accurate and timely government market information is a constraint for agro-processors.

Hopefully, the National Rural Development Policy (NRDP, 2001) provides a mandate to rural development organization for improvement of rural livelihoods. Agro processing is important key component for rural mass employment generation. It prioritizes special development programmes for the streamline entrepreneurship development. These models preferred to create alternative

development initiatives in the rural areas to reduce poverty and livelihood improvement of rural people is the right of agro processing enterprise.

The activities agro processing directed towards that end to reduce social and economic vulnerability of the villagers under introduction of new agribusiness opportunities, which will accelerate local and national economic activities as well.

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